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High-performance programs in schools

Safe and sustainable athlete development

SSISA Wellness and Fitness Convention 2016

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Who am I?



- S&C coach
- Youth athlete development
- 10 years experience in high school sport.

- Sport Scientist
- Training load management
- Injury prevention



What's the problem?

Kids are getting hurt



In the USA

- 2 million injuries/year
- 1 in 4 children are injured playing sport every season
- Overuse injuries \approx 50% of high school sports injuries

U.S. Centers for Disease Control (CDC) data

Situation in South Africa?

Its hard to say...

Injury incidence in high school rugby in FS and NC is **DOUBLE** Super Rugby
Holtzhausen et al., (In press)

Majority of private and traditional monastic schools have physiotherapists on site.

Personal experience – aware of more than 20 ACL injuries that have taken place at my own school in the past 2 years.



Effect of serious injury

Life changing event

- Cost of surgery/rehabilitation
- Time loss – academics and sport participation
- Mental/social effects

Labella et al., Pediatrics, 2014 133(5)

Long term effects

Previous injury is the largest risk factor for subsequent injury in all sports.

Fulton et al., IJSPT, 2014 9(5)

Less likely to sustain long term participation in sporting activities

DiFiori et al., CJSMB, 2014 24(1)

Reasons for Increased Injuries



- Increased competitiveness
- Sponsorships
- Media attention
- Rankings

Lead to

- Earlier specialisation
- Increased training time
- Gyms in schools

THE EFFECTIVENESS OF EXERCISE INTERVENTIONS TO PREVENT SPORTS INJURIES

Hansen et al. in British Journal of Sports Medicine, 2014

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strength training, stretching or
prevention exercises protect
sports injury?

**3464
injuries**



• No benefit

• Injuries prevented by training

- Key concepts
- Adequate strength
- Movement quality

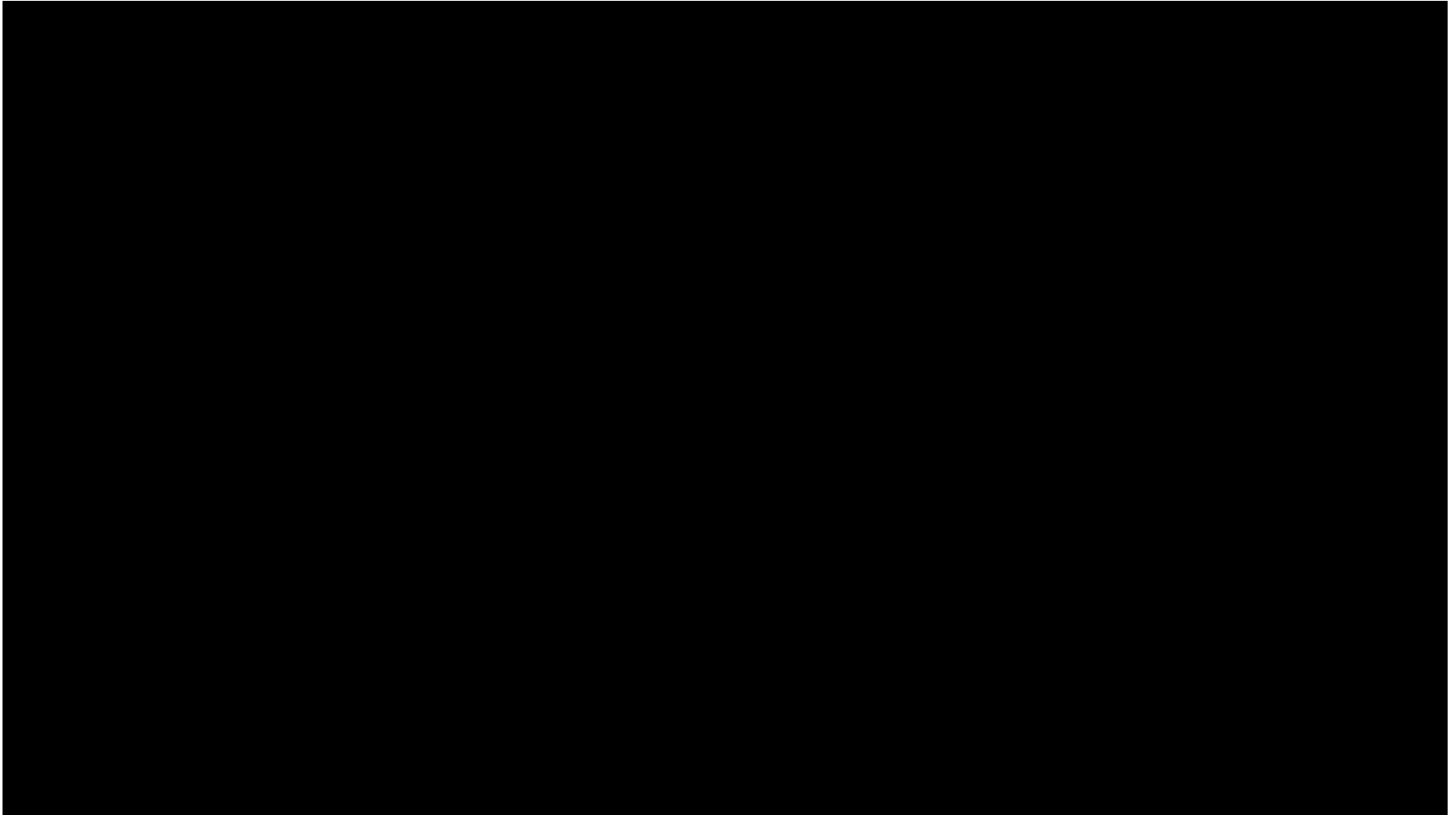
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Strength training
reduces sports
injuries to less
than one third

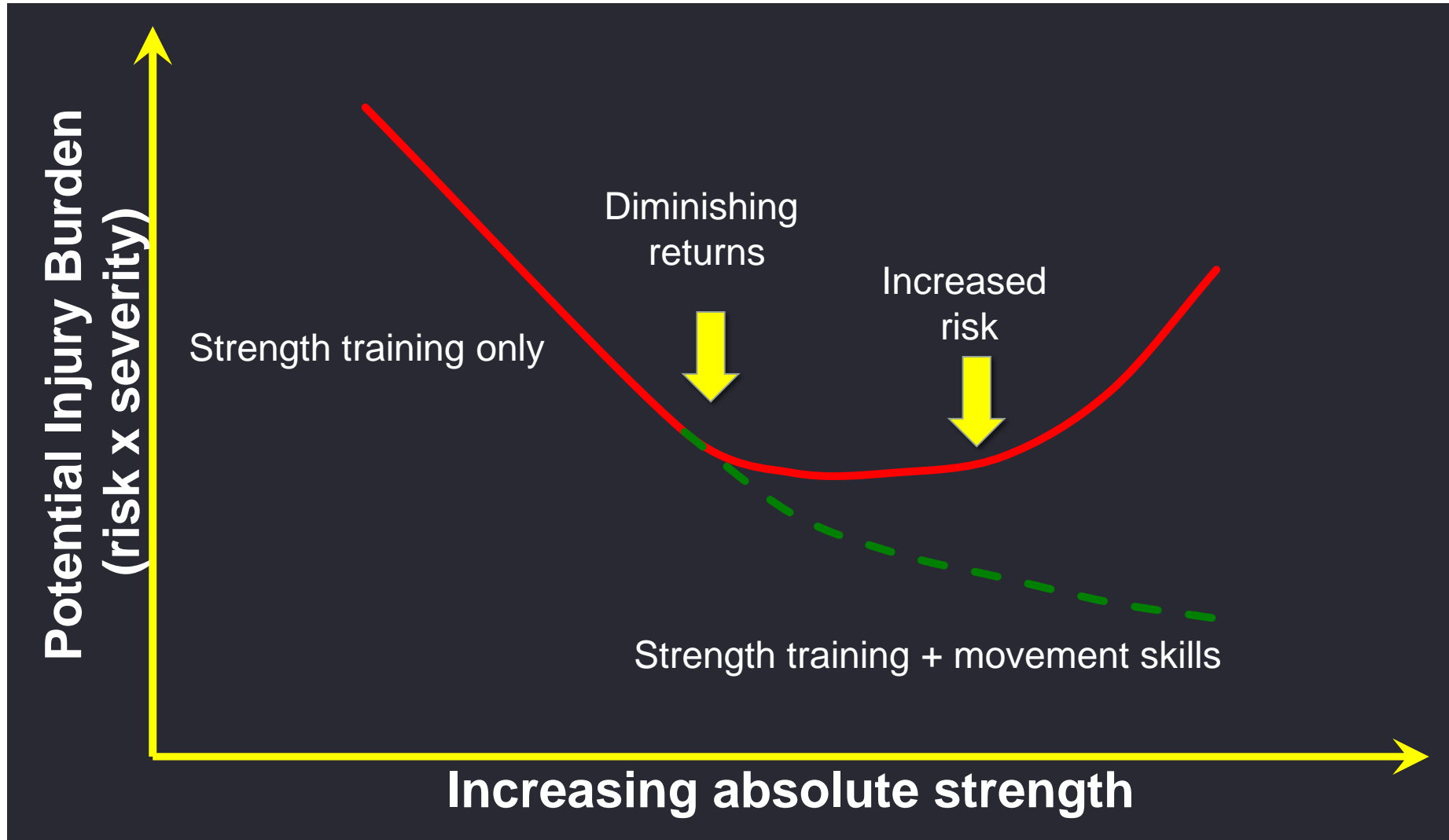


Overuse injuries
could be almost
halved by
adequate strength
training

Over-powered athletes



Strength training and injury risk

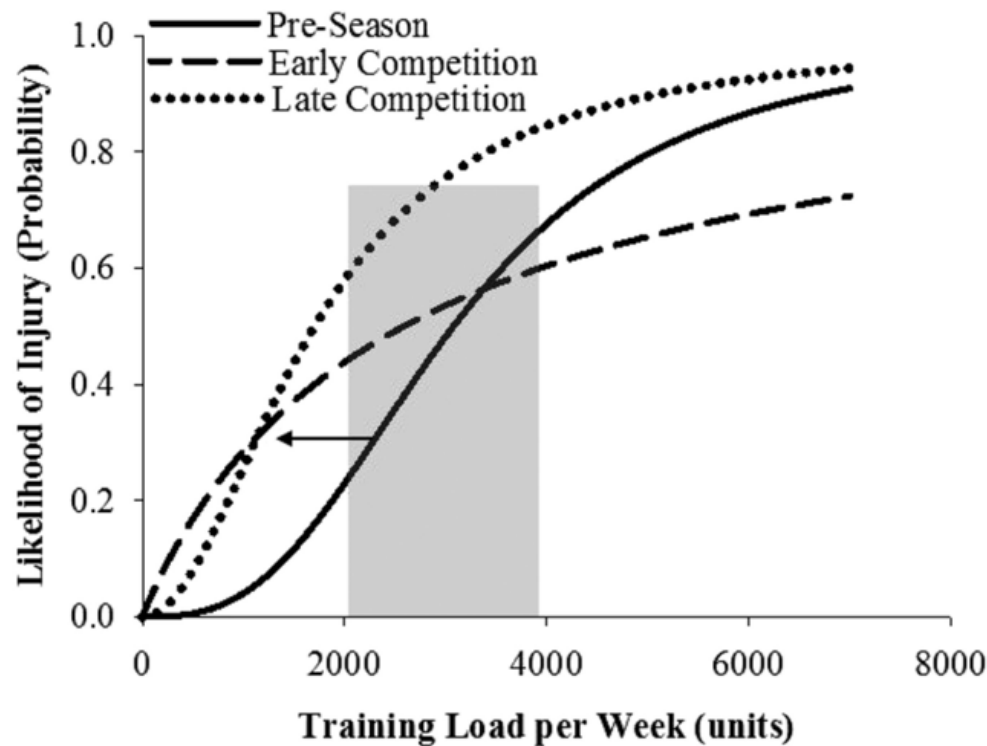


Movement skills



Training loads

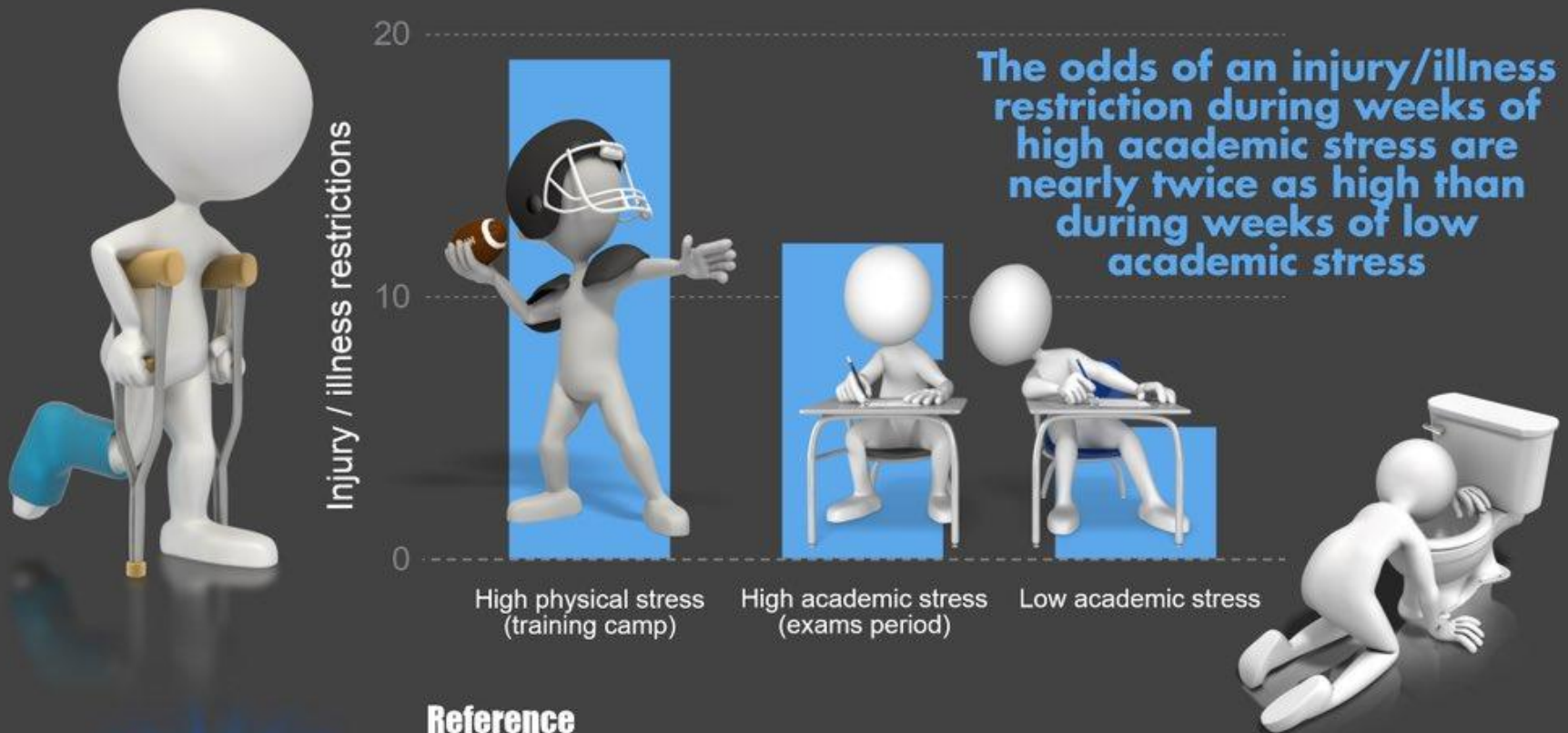
Relationships between training load, training phase, and likelihood of injury in elite team sport athletes.



Tim J Gabbett Br J Sports Med doi:10.1136/bjsports-2015-095788

Stress, illness and injury in college football players

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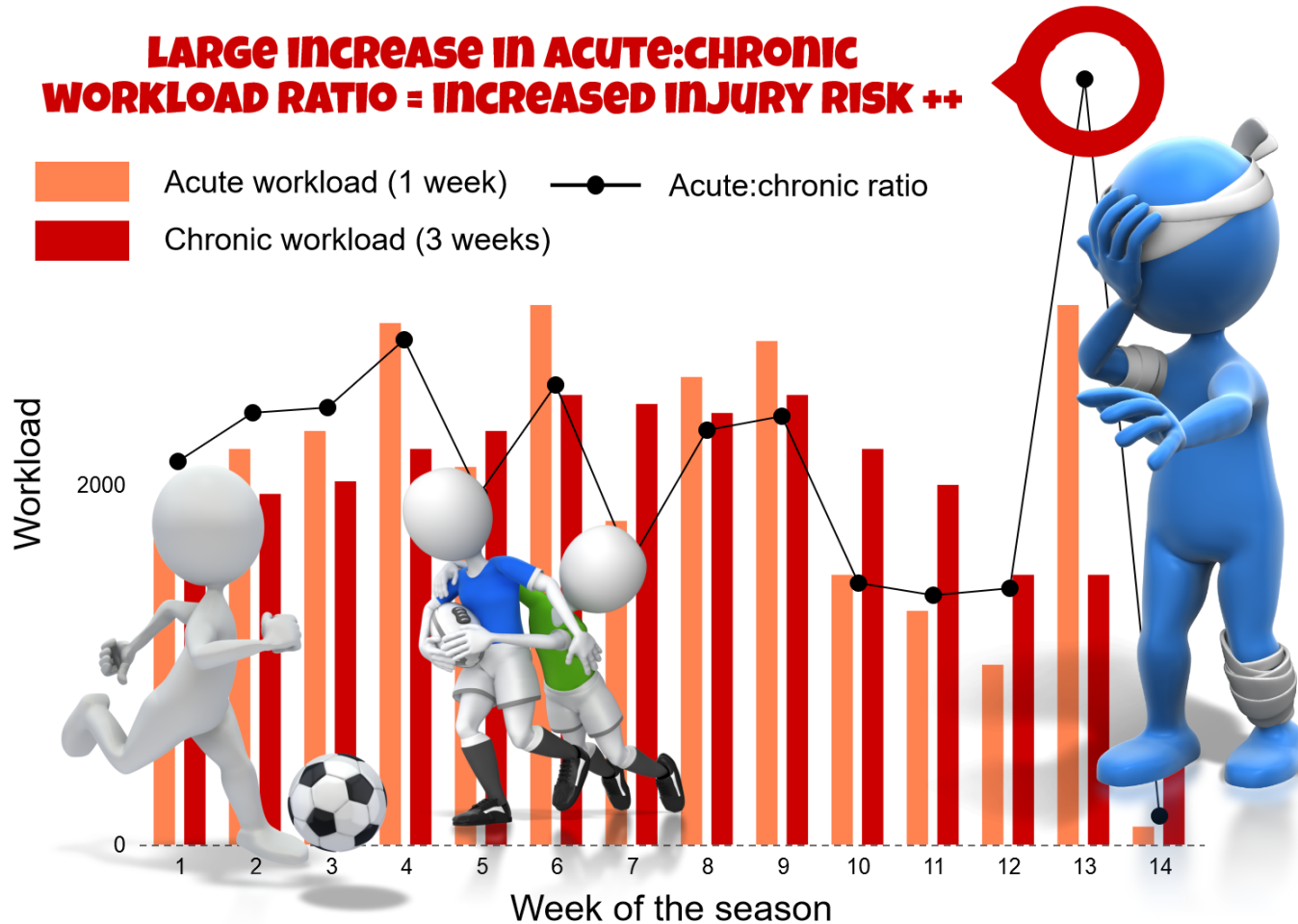


Reference

The effect of physical and academic stress on illness and injury in division 1 college football players
by Bryan Mann et al. in J Strength Cond Res, May 2015

HIGH TRAINING WORKLOADS ALONE DO NOT CAUSE SPORTS INJURIES: HOW YOU GET THERE IS THE REAL ISSUE

**LARGE INCREASE IN ACUTE:CHRONIC
WORKLOAD RATIO = INCREASED INJURY RISK ++**



Reference: by Gabbett, Hulin, Blanch & Whiteley, BJSM 2016

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High-risk after holidays

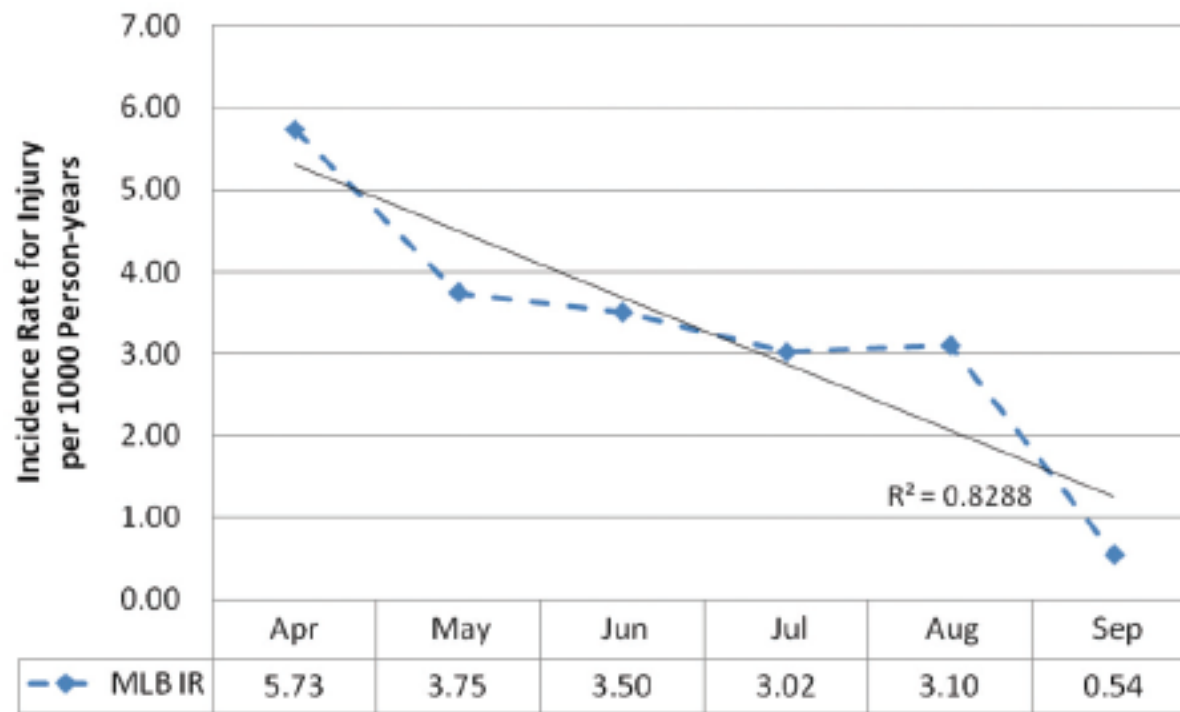


Figure 3. Injury incidence rates for all players by month of season.

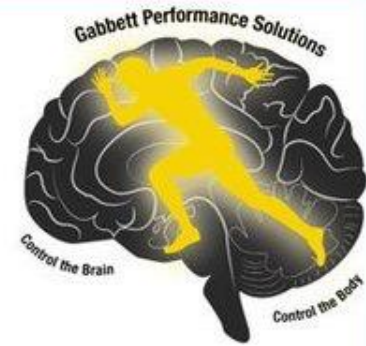
Posner et al., Am. J Sports Med, 2011, 39(8)

Calendar and pressure

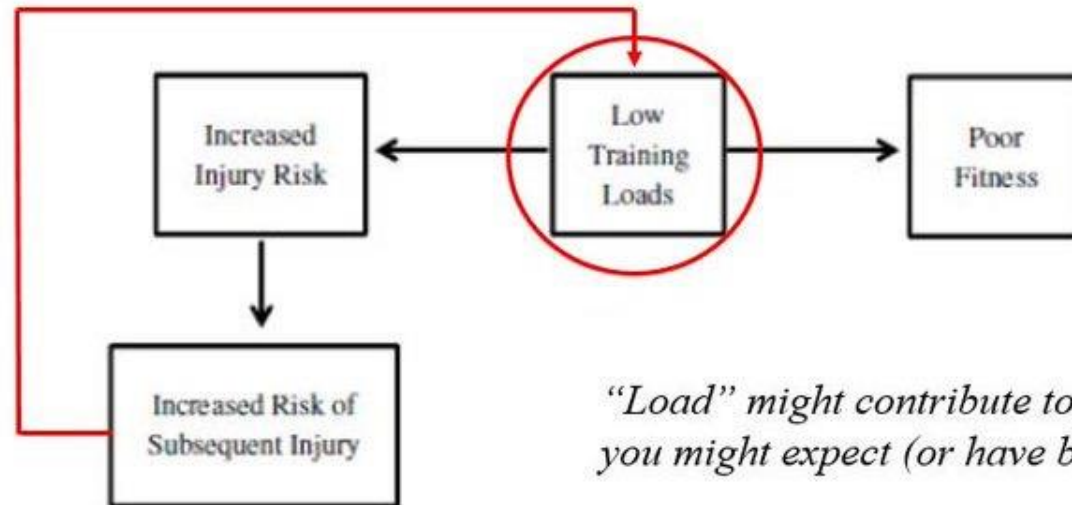
2016

January							April							July							October							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
					1	2						1	2							1							1	
3	4	5	6	7	8	9	3	4	5	6	7	8	9	3	4	5	6	7	8	9	2	3	4	5	6	7	8	
10	11	12	13	14	15	16	10	11	12	13	14	15	16	10	11	12	13	14	15	16	9	10	11	12	13	14	15	
17	18	19	20	21	22	23	17	18	19	20	21	22	23	17	18	19	20	21	22	23	16	17	18	19	20	21	22	
24	25	26	27	28	29	30	24	25	26	27	28	29	30	24	25	26	27	28	29	30	23	24	25	26	27	28	29	
31														31							30	31						
February							May							August							November							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
	1	2	3	4	5	6	1	2	3	4	5	6	7		1	2	3	4	5	6				1	2	3	4	5
7	8	9	10	11	12	13	8	9	10	11	12	13	14	7	8	9	10	11	12	13	6	7	8	9	10	11	12	
14	15	16	17	18	19	20	15	16	17	18	19	20	21	14	15	16	17	18	19	20	13	14	15	16	17	18	19	
21	22	23	24	25	26	27	22	23	24	25	26	27	28	21	22	23	24	25	26	27	20	21	22	23	24	25	26	
28	29						29	30	31					28	29	30	31				27	28	29	30				
March							June							September							December							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
		1	2	3	4	5				1	2	3	4					1	2	3					1	2	3	
6	7	8	9	10	11	12	5	6	7	8	9	10	11	4	5	6	7	8	9	10	4	5	6	7	8	9	10	
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27	28	29	30	31			26	27	28	29	30			25	26	27	28	29	30		25	26	27	28	29	30	31	

- 18 non-training weeks per year
- Fixture timing
- Pre-season training



The Constant 'Rehab-er'



“Load” might contribute to injury – just not in the way you might expect (or have been led to believe) ...

Gabbett, T.J. (2016). The training-injury prevention paradox: should athletes be training smarter *and* harder? *British Journal of Sports Medicine*, (in press).

Reducing injuries improves performance

Performance success or failure is influenced by weeks lost to injury and illness in elite Track and Field athletes

Reference: by BP. Raysmith MK. Drew JSMS 2016

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RESULTS

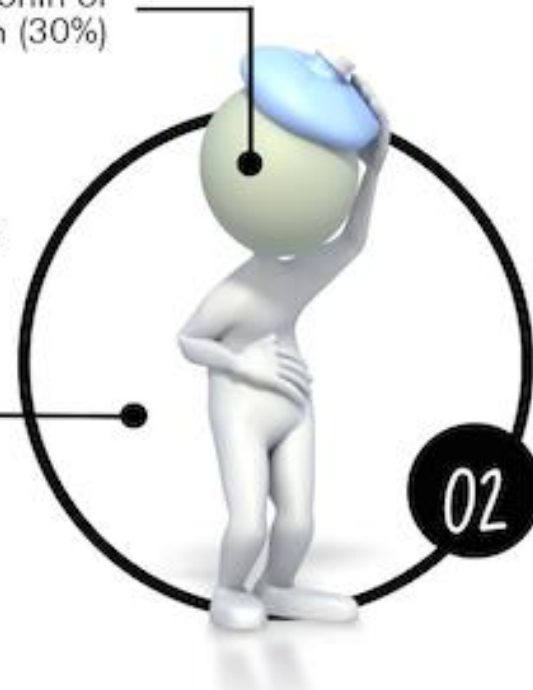


The majority of new injuries occurred within the first month of the preparation season (30%)

Likelihood of achieving a performance goal increased by 7-times in those that completed >80% of planned training weeks

Most illnesses occurred within 2-months of the event (50%)

Training availability accounted for 86% of successful seasons



Take home messages

- Extreme **competitiveness** in high school sports **is increasing injury risk**
- These **risks can be managed** through good training plans
- Must consider **BOTH** strength and movement quality
- **Acute:Chronic training loads** affect injury risk – know what your athletes have been doing
- **Cautious approach** to training load, more likely to ensure **long-term success**.

Thanks for listening!



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